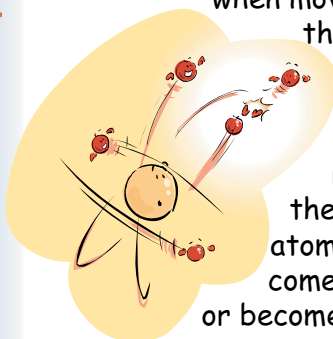




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Flying Food!

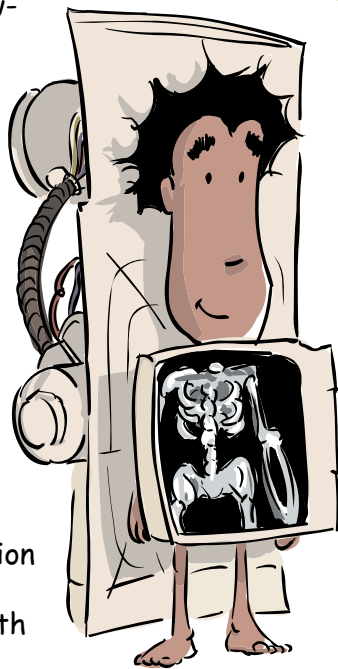
Everything around us is made up of very small particles called **atoms**. Some atoms aren't as calm as others. These nervous atoms are called unstable, and when moving around, they give off energy.



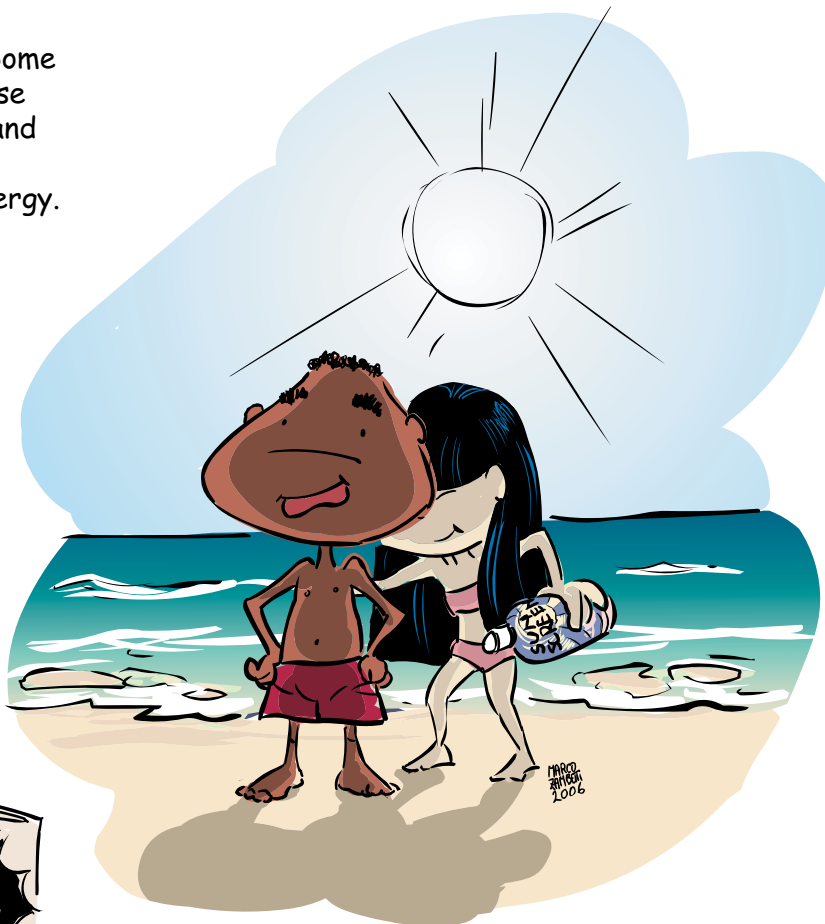
We call this nervous energy **radiation**. As they move, the atoms try to become calm again, or become stable.

Believe it or not, we are surrounded by radiation all the time.

Radiation comes from outer space, the sun, the Earth, and even from our own bodies! Radiation can also come from cellular phones, televisions, microwaves, glow-in-the-dark watches, high-voltage power lines, and many other items. Radiation can be very helpful to us - it can be used to fuel power plants, to produce medical x-rays, or to treat cancer.



Too much radiation exposure can be bad for our health and for the environment. The radiation given off by the sun can be quite dangerous to humans on Earth and in space. Astronauts wear space-suits that protect them from many dangers in space, one being radiation. During space walks, astronauts must wear face shields in their helmets to protect themselves from the large amount of ultraviolet (UV) radiation.



UV radiation can cause damage to the skin, commonly known as sunburn. On Earth, the ozone layer and lower atmosphere help to protect us from some of the UV radiation given off by the sun. Some of the UV light filters through the atmosphere and still reaches us here on Earth, which is why we protect ourselves with sunglasses and sunscreen with SPF 15 or higher.

Along with everything else, the food that astronauts eat in space is also exposed to radiation. On the next mission, we will send food on the Space Shuttle to the International Space Station (ISS). On that flight, and on future Space Shuttle flights, some of the food will be brought back to Earth and its vitamin content will be analyzed. This research will allow us to determine if it is necessary to change the packaging of food for space travel or even change the types of space foods to meet the vitamin requirements of astronauts.

Space Nutrition

Thea's Corner...

Try this experiment to see the effects of UV radiation from the sun, and to see the effects of sunscreen on UV radiation:

1. Fill a clear glass almost to the top with tonic water.
2. Fill a clear glass almost to the top with tap water.
3. Place the glasses outside so that direct sunlight strikes the surface of both glasses of water.
4. Hold a black piece of paper behind the glasses. Look through the sides of the glasses toward the surface of the liquid.
5. What do you observe about 1/4 inch from the top of the tonic water?



A special ingredient in tonic water (quinine) allows it to glow in the presence of UV light. Now try spreading a thin layer of sunscreen on a clear overhead transparency sheet and place the sheet over the glass of tonic water. Can you describe what happens?

Did You Know?



- Just as length is measured in a unit called a meter, radiation is measured in a unit called a rem. One thousandth of a rem is called a millirem (similar to how one thousandth of a meter is called a millimeter).
- Most Americans are exposed to about 360 millirem of radiation per year. Check out: <http://www.epa.gov/radiation/students/calculate.html> to learn about your exposure to radiation.
- UV radiation from the sun can be beneficial (sunlight makes plants grow) or harmful (over-exposure may cause sunburns.)

Word of the Month

Assessment

Can you guess what this word means? Look it up in the dictionary and see if you were right. We'll have more on this next month!

Web Links:

<http://www.nsc.org/ehc/kidscorn.htm>
<http://www.nrc.gov/reading-rm/basic-ref/students/radiation.html>
http://www.philrutherfordford.com/radiation_kids.html
www.nasa.gov/kidsclub



Check out Thea's Bonus Page, experiments you can try, and even stuff you may have done at our website:

http://haco.jsc.nasa.gov/resources/kid_zone.htm
email: Space.Nutrition.Newsletter@nasa.gov